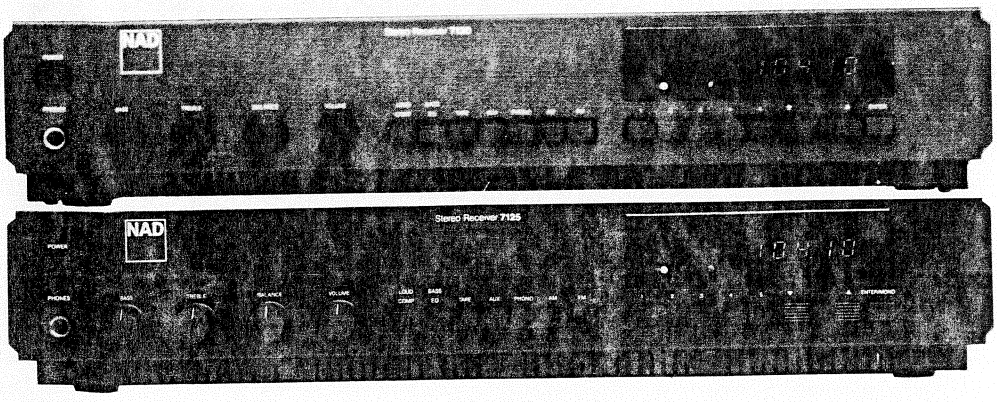
54

NAD SERVICE MANUAL



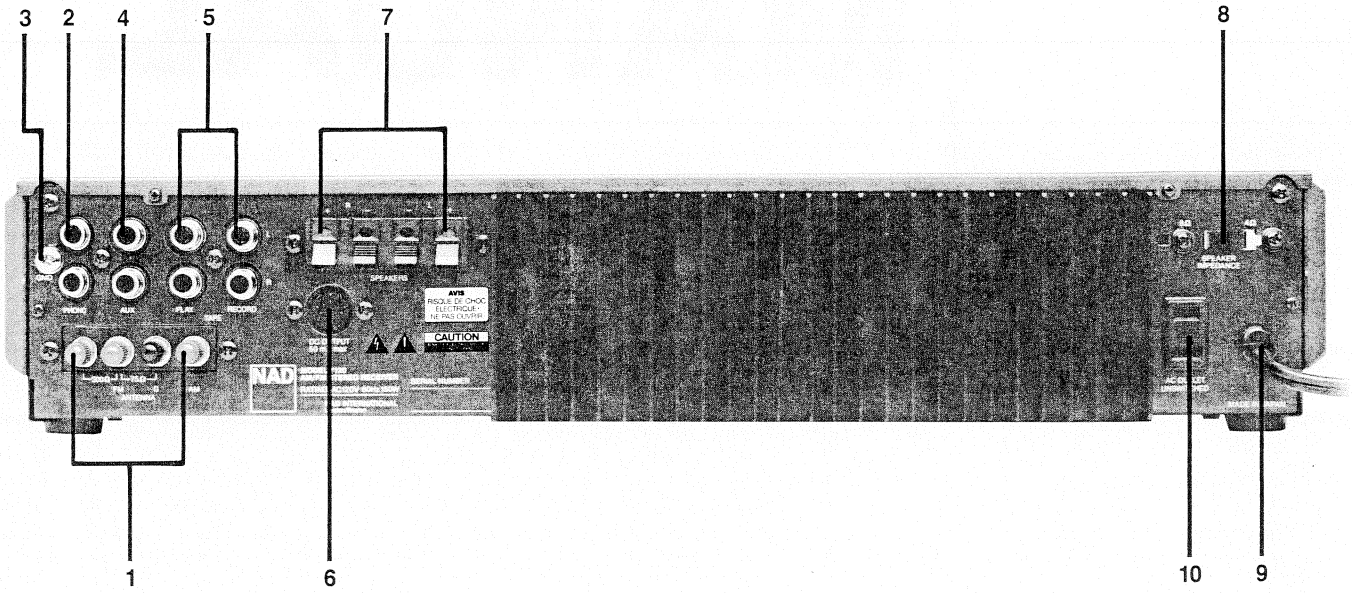
MODELS

7120

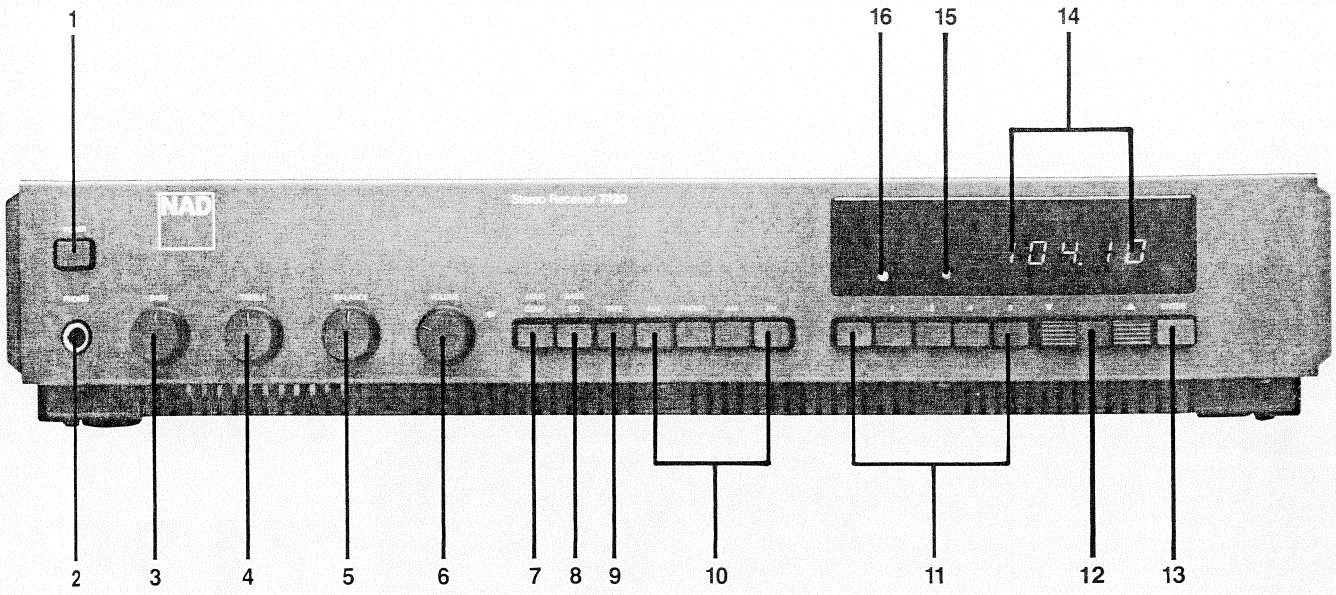
7125

54

1. Antenna Terminals
2. Phono Input
3. Phono Ground
4. Aux Input
5. Tape Rec/Play
6. DC Output
7. Speakers
8. Speaker Impedance
9. AC Power Cord
10. AC Convenience Outlet
    (Not in U.K. Model)



1. Power
2. Phones
3. Bass
4. Treble
5. Balance
6. Volume
7. Loudness Compensation
8. Bass Equalization
9. Tape Monitor
10. Input Selector (Aux, Phono, AM, FM)
11. Tuning Pre-sets
12. Up/Down Tuning
13. Memory Enter
14. Tuning Display
15. FM Stereo Beacon
16. Power Indicator



1. Antenna Terminals
2. Phono Input
3. Phono Ground
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6. Speakers
7. Speaker Impedance
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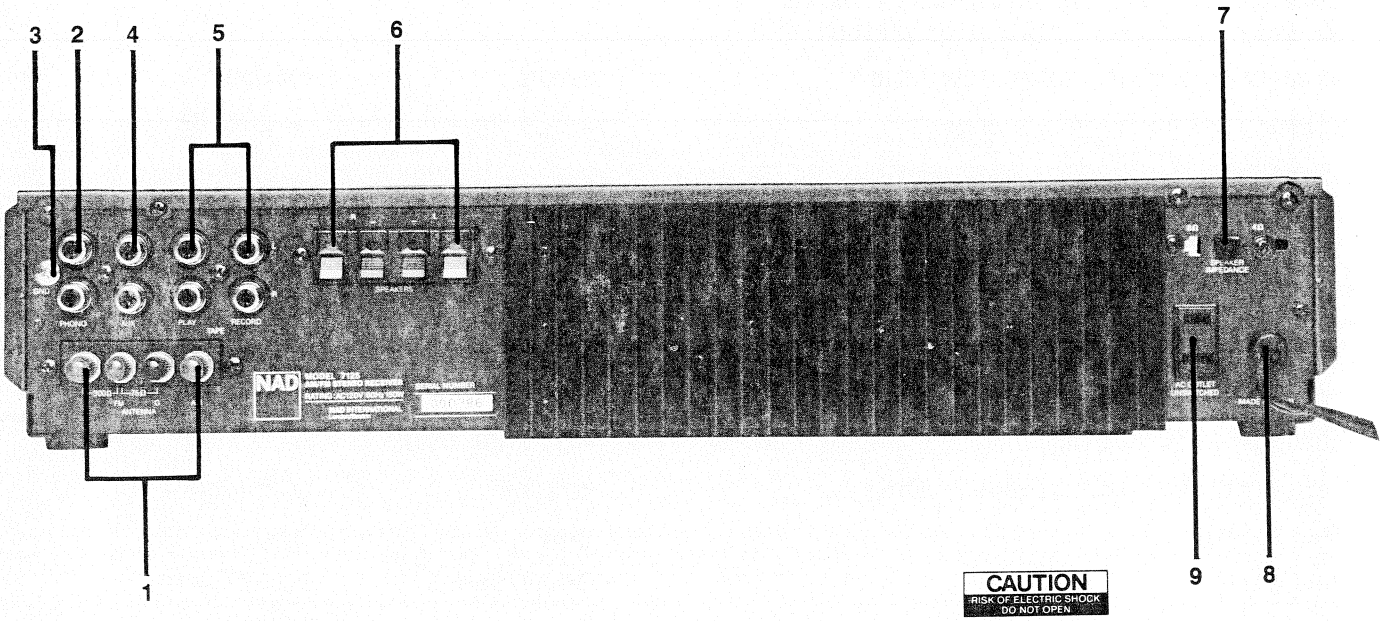
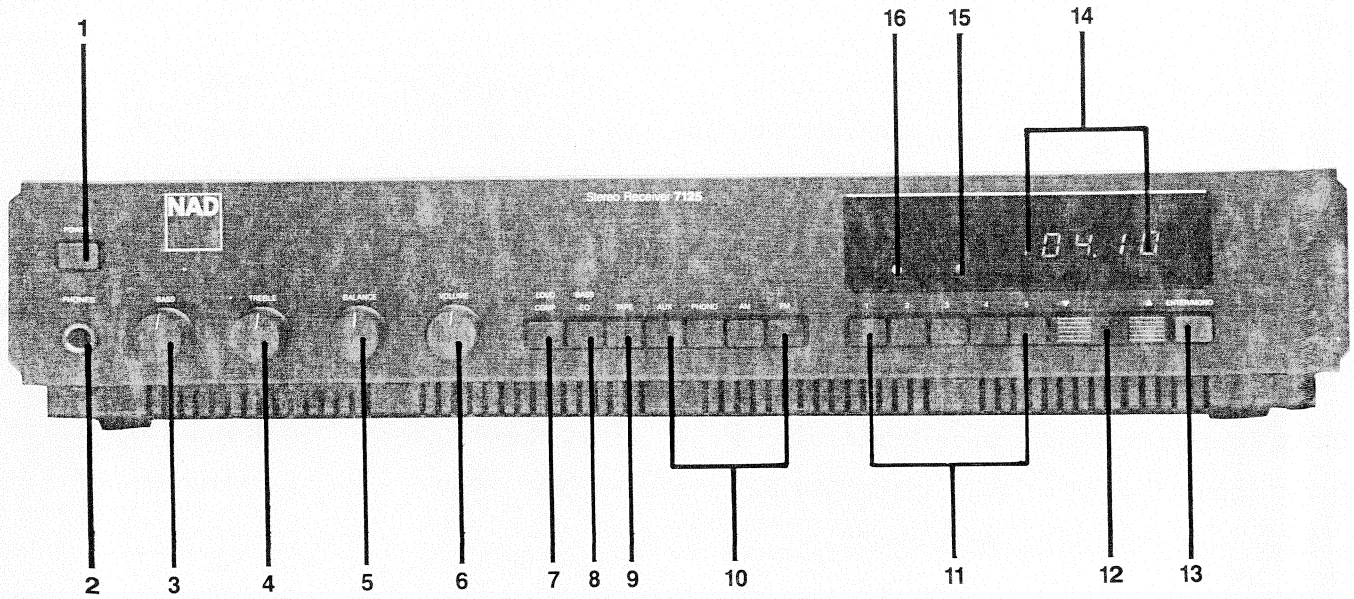


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

1. Power
2. Phones
3. Bass
4. Treble
5. Balance
6. Volume
7. Loudness Compensation
8. Bass Equalization
9. Tape Monitor
10. Input Selector (Aux, Phono, AM, FM)
11. Tuning Pre-sets
12. Up/Down Tuning
13. Memory Enter/Mono
14. Tuning Display
15. FM Stereo Beacon
16. Power Indicator



SPECIFICATIONS

AMPLIFIER SECTION		7120	7125
Continuous Average Power Output at 8 Ohms (min. RMS Power per Channel, 20-20 kHz, both channels drive, with no more than the Rated Distortion)		20W (13 dBW)	25W (13 dBW)
Rated Distortion, 20-20 kHz, THD		0.05%	0.05%
Clipping Headroom at 8 ohms		+ 1.5 dB	+ 2.5 dB
Clipping Power (Maximum Continuous Power per Channel)	8 ohms 4 ohms	28W 37W	36W 32W
Dynamic Headroom at 8 ohms		+ 4 dB	+ 3 dB
Dynamic Power (Maximum Short-term Power per channel)	8 ohms 4 ohms	50W 58W	50W 50W
Reactive Load Rating		+ 1.7 dB (30W)	+ 1.7 dB (30W)
Transient Overload Recovery Time		<5µsec.	<5µ sec.
Slew Factor		>50	>50
Slew Rate		>15V/µsec.	>15V/µsec.
Damping Factor (ref. 8 ohms)		>50	>50
THD (Total Harmonic Distortion, 20-20 kHz) from 250 mW to Rated Output		<0.05%	<0.05%
SMPTE IM (Intermodulation Distortion, 60Hz + 7kHz, 4:1), from 250mW to Rated Output.		<0.02%	<0.02%
IHF IM (CCIF IM Distortion, 19k + 20 kHz) at Rated Output.		<0.02%	<0.02%
T.I.M. (Transient Intermodulation Distortion, 15kHz sine + 3.18kHz Square Wave) at Rated Output.		<0.02%	<0.02%
PHONO INPUT			
Input Impedance (Resistance/Capacitance)		47 Kohm/100pF	47 Kohm/100pF
Input Sensitivity (1kHz) for 1W out/20W out		0.5mV/2.5mV	0.5mV/2.5mV
Input Overload at 20Hz/1kHz/20kHz		15mV/140mV/1.15V	15mV/140mV/1. 15V
RIAA Response Accuracy		±0.3 dB	±0.3 dB
Signal-to-Noise Ratio, A-Weighted with Phono Cartridge Connected ref 5mV.		75 dB	75 dB
HIGH LEVEL INPUTS (AUX, TAPE)			
Input Impedance (Resistance/Capacitance)		20 Kohm/100pF	20 Kohm/100pF
Input Sensitivity for 1W out/for 20W out		30mV/150mV	30mV/150mV
Signal-to-Noise Ratio, A-weighted Ref. 1W out Ref. 20W out		 >86 dB >96 dB	 >86 dB >96 dB
Frequency Response, 20-20kHz		±0.5 dB	±0.5 dB

TAPE OUTPUT			
Output Impedance		350 ohm	350 ohm
CONTROLS			
Bass Control Range		±10dB at 50Hz	± 10dB at 50Hz
Treble Control Range		± 7dB at 10kHz	± 7dB at 10kHz
Infrasonic Filter	Turnover frequency Slope	15 Hz 12 dB/Octave	20 Hz 12 dB/Octave
Ultrasonic Filter	Turnover frequency Slope	35kHz 12 dB/Octave	35kHz 12 dB/Octave
Bass EQ		+5 dB at 35Hz	+ 5 dB at 50Hz

TUNER SECTION

FM SECTION			
Input Sensitivity, IHF, usable sensitivity		1.9µV (10.8dBf)	1.9µV (10.8dBf)
50dB quieting mono		3.0µV (14.8dBf)	3.0µV (14.8dBf)
50dB quieting stereo		30 µV (34.8dBf)	30 µV (34.8dBf)
Signal-to-Noise Ratio (A-weighted, at 65dBf)	Mono/Stereo	80dB/75dB	80dB/75dB
Frequency Response 30-15 kHz		±0.5dB	± 0.5dB
De-emphasis Accuracy (75usec.)		±0.3dB	± 0.3dB
Channel Separation,	1kHz	42dB	42dB
	30-15kHz	32dB	32dB
Selectivity, Alternate Channel (400kHz)		65dB	65dB
AM Suppression at 45dBf and 65dBf		60dB	65dB
Capture Ratio at 45dBf and 65dBf		1.5dB	1.5dB
Image Rejection		50dB	60dB
IF Rejection		75dB	75dB
SCA Rejection		70dB	70dB
Pilot Signal Suppression		65dB	65dB
THD at 100% Modulation:	1kHz Mono/Stereo	0.2%/0.3%	0.2%/0.3%
	100Hz Mono/Stereo	0.2%/0.3%	0.2%/0.3%
	6kHz Mono/Stereo	0.3%/0.4%	0.3%/0.4%
AM SECTION			
Usable Sensitivity		250µV	250µV
Selectivity		30dB	30dB
Image Rejection		50dB	50dB
I.F. Rejection		40dB	40dB

PHYSICAL SPECIFICATION :	(H) x (W) x (D)	8.3 cm x 42 cm x 28.8 cm 3.25in x 16.5in x 11.25in
	Net Weight	5.2 kg. / 11.5 lbs.
Power Requirements :		50/60 Hz, 110-120V AC
(Not Convertible)		50 Hz, 220V AC 50 Hz, 240V AC

ALIGNMENT METHOD

AUDIO SECTION 7120/7125

IMPORTANT

Speaker Impedance switch should be in 8 ohm position while adjusting center voltage and idling current.

INITIAL ADJUSTMENT (No load connected)

CENTER VOLTAGE

1. Connect DC millivoltmeter to L channel output terminals. Turn on and adjust to 0 V±30mV with VR101. Connect DC millivoltmeter to R channel output terminals and adjust VR201 to 0 V±30mV.

IDLING CURRENT

2. Connect DC millivoltmeter across R150 (output transistor's emitter resistor) and adjust VR102 for 2-4mV reading on meter. Repeat adjustment with VR202 connecting meter across R250.
3. Leave power on for minimum 5 minutes.

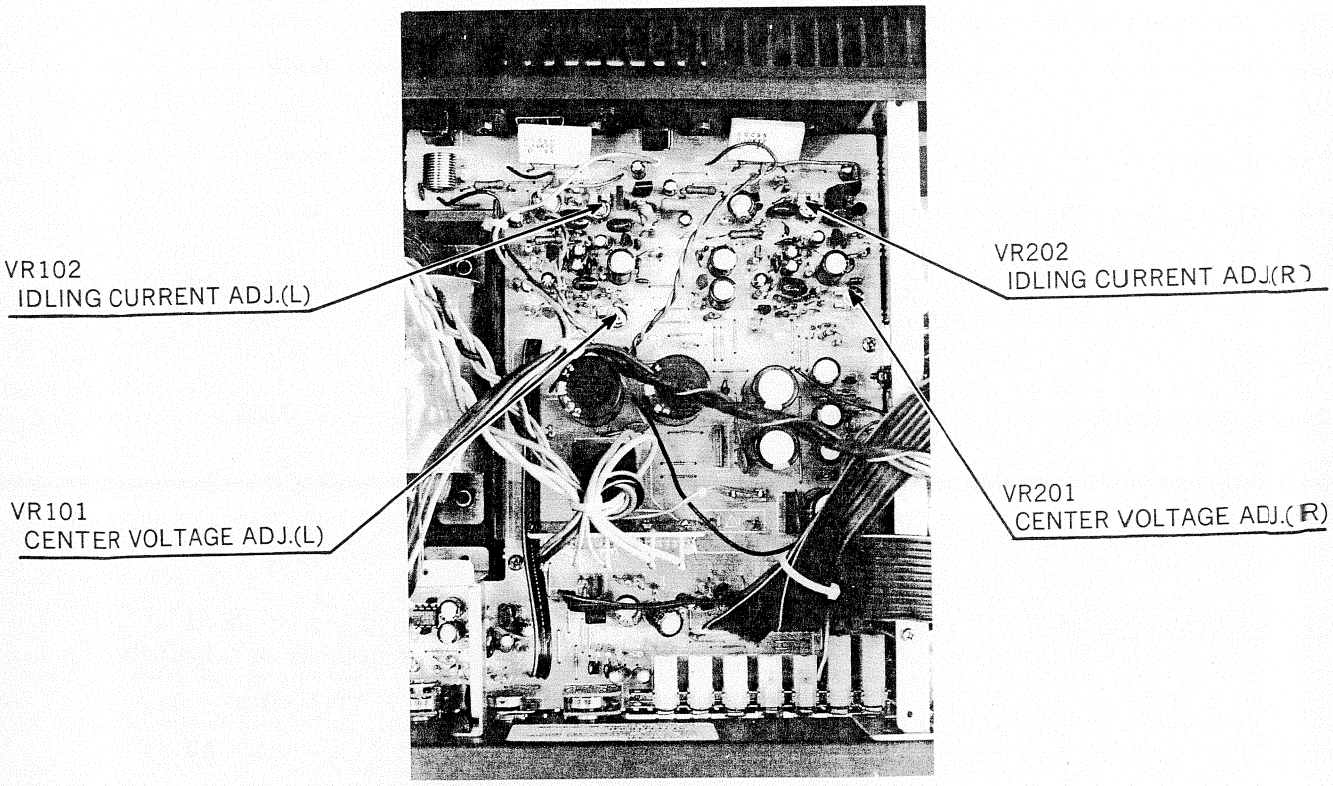
FINAL ADJUSTMENT

CENTER VOLTAGE

4. Repeat step 1 above.

IDLING CURRENT

5. Repeat step 2 and adjust with VR102 for 4mV reading on meter.



Unless repairs have been done to Oscillator Section, do not adjust AM OSC coil or Trimming Capacitor.

If OSC Adjustment is needed, connect high impedance voltmeter (preferably DMM) between R42 and ground.

OSC ADJUSTMENT

1. Tune unit to show 1610KHz or 1602KHz on display and adjust L7 to read 7.5V on DMM.
2. Tune unit to show 520KHz or 522KHz on display and check if it reads 1V±0.5V on DMM.

IF ADJUSTMENT

3. For IF adjustment and Tracking adjustment connect VTVM to loudspeaker output (or tape output), only one channel connection needed, and connect signal generator to antenna terminals. Adjust generator for 30% modulation and approx. 100µV input.

   Tune both generator and receiver to approx. 1000KHz, and adjust generator frequency for maximum reading on VTVM. Then adjust L9 and L8 (A and B) for maximum reading on meter.

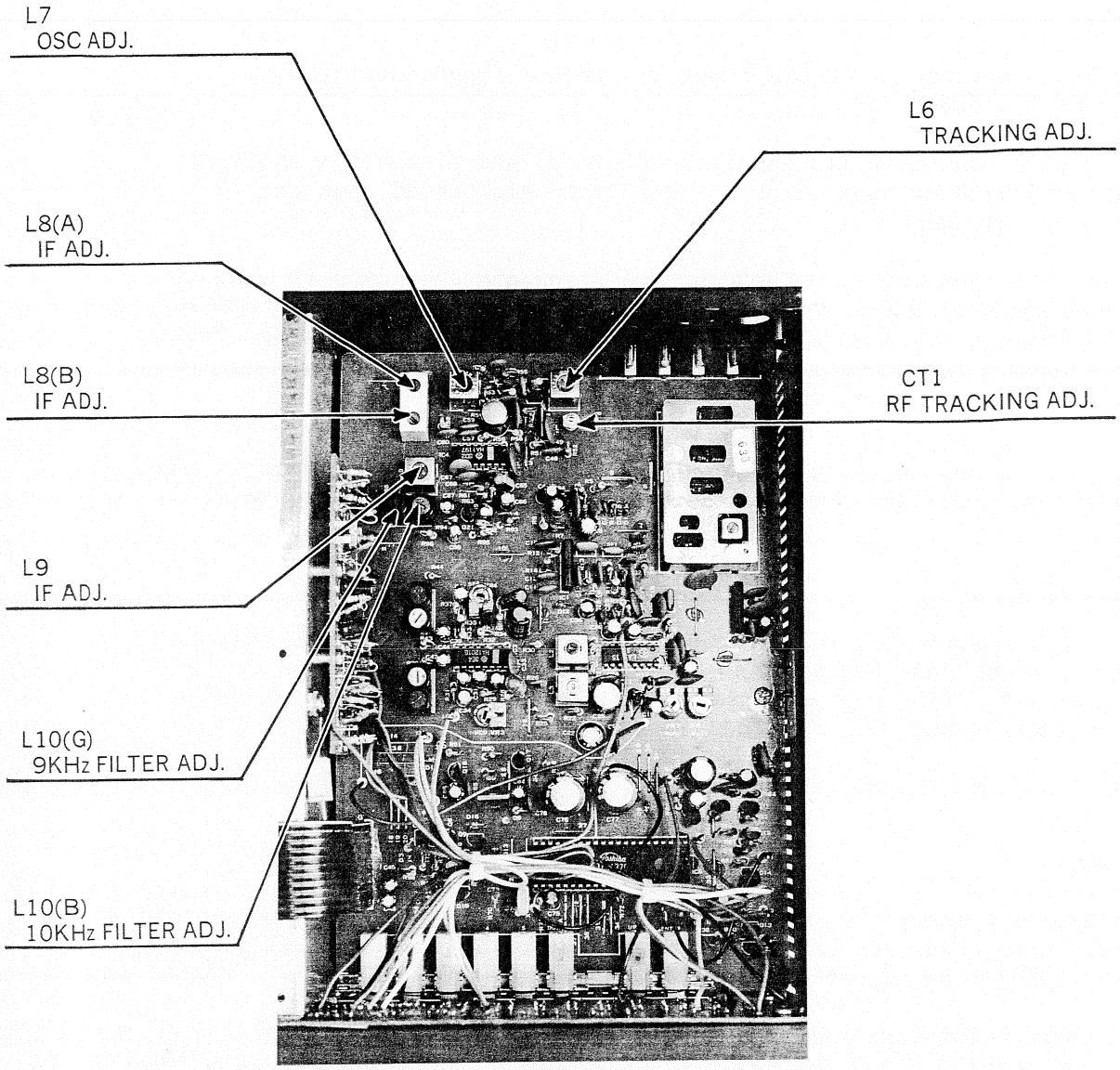
TRACKING ADJUSTMENT

4. Tune unit and generator to show approx. 620KHz and adjust L6 to maximum reading on VTVM.
5. Tune unit and generator to show approx. 1400KHz and adjust CT1 (Trimming Capacitor) for maximum reading on VTVM.
6. Repeat step 4 and 5 so that both are peaked.

   WARNING:
   Generator output should be low enough to avoid AGC circuit to function and determine the meter reading. This will mean that the output signal should sound and look (if observed on an oscilloscope) noisy.

9/10 KHz FILTER ADJUSTMENT

7. Modulate generator 9KHz and adjust L10 (Green Core) to minimum reading on VTVM.
8. Modulate generator 10KHz and adjust L10 (Black Core) to minimum reading on VTVM.


L7
OSC ADJ.
L6
TRACKING ADJ.
L8(A)
IF ADJ.
L8(B)
IF ADJ.
CT1
RF TRACKING ADJ.
L9
IF ADJ.
L10(G)
9KHz FILTER ADJ.
L10(B)
10KHz FILTER ADJ.

RF AND OSCILLATOR ADJUSTMENT

1. Tuner RF and Oscillator should not be adjusted, they are preset from the factory. If tuner front-end has been replaced, the new front-end needs only IF adjustment.

IF ADJUSTMENT

2. Connect FM generator to 300 ohm input via proper impedance matching transformer or network.

3. Connect VTVM's (and oscilloscope if so desired) and distortion analyzer to speaker outputs or tape outputs. Both channels needed, but not necessary at the same time.

4. To adjust IF output from front-end, set receiver and generator to approx. 98MHz and generator output to 1µV with 100% modulation, 1 KHz (or 400 Hz). Adjust IF coil to maximum output on VTVM, observing on oscilloscope that the curve should show considerable noise, however, it should be easy to observe audio signal level changes despite the noise.

   WARNING:
   This adjustment must be done below the tuners limiting point (This is the point where audio output does not increase even with increased output from generator).

DETECTOR ADJUSTMENT

5. Set output from generator to approx. 1mV. Adjust L2 for maximum output at 1KHz (or 400Hz) and adjust L3 for minimum distortion.
   Repeat the L2 and L3 adjustments until no further improvements. Typical output on tape-output will be 0.5 to 0.8V and 0.1% or less THD.

6. Turn VR1 fully anticlockwise.

MPX ADJUSTMENT

7. Connect high impedance frequency-counter (100K ohm or more) to test point VCO (between R28 and VR3) and generator input at 100 - 1000µV no modulation (not even 19KHz) and adjust VCO to 76KHz ± 10Hz by means of VR3.

8. Set generator pilot-tone modulation to 6 - 8% (level has no effect on Stereo Separation) and while adjusting generator output from 1µV and up, adjust VR2 for stereo-light to turn on around 15µV. When adjusting generator output from high (approx. 100µV) and going down, stereo light should turn off between 5 - 10µV.

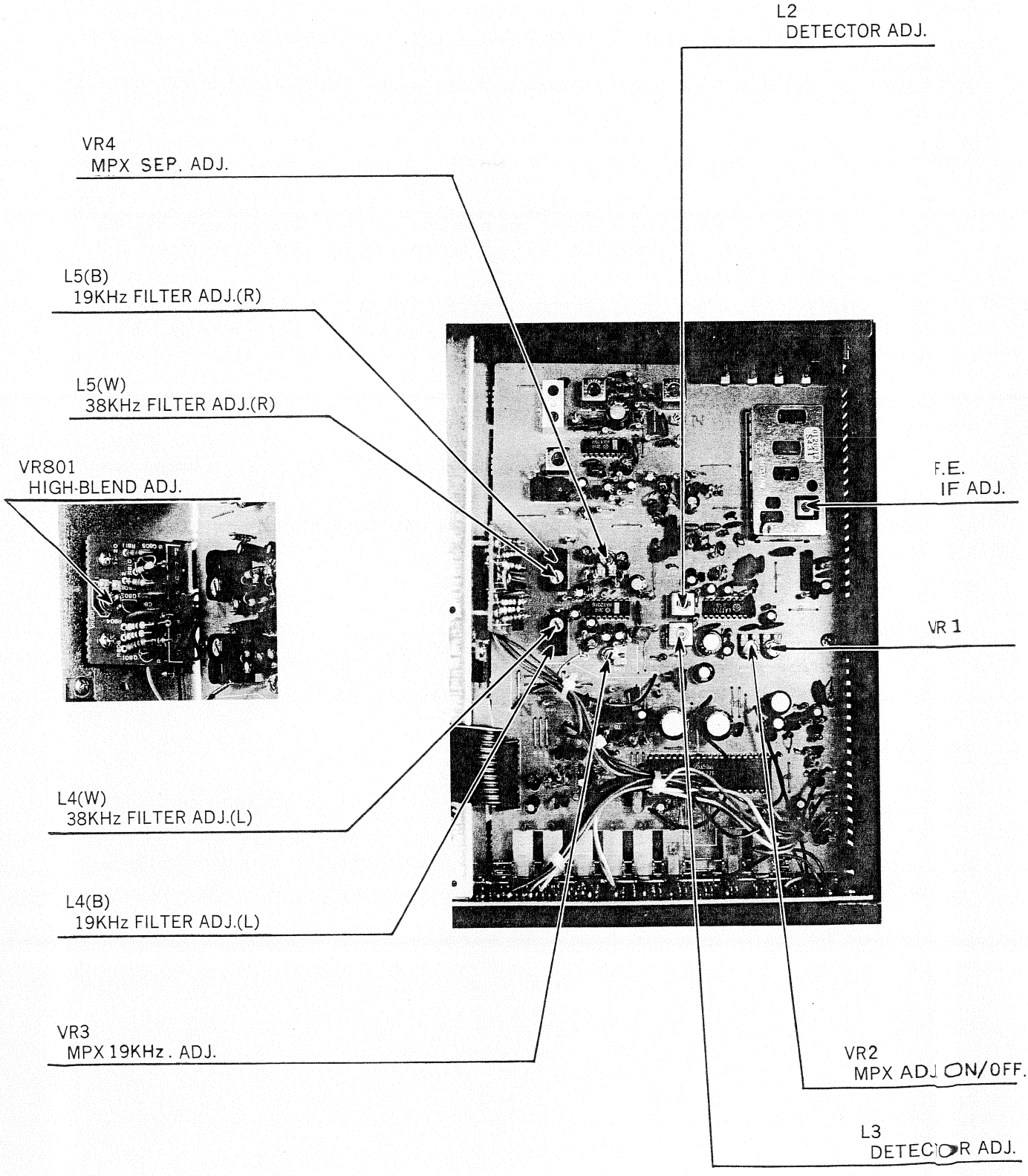
9. Set generator to 1mV 100% modulation, 1 KHz (or 400 Hz) Stereo L or R. Adjust VR4 for maximum level difference between left and right channel on the meter. Repeat adjustment until separation is approximately identical for L to R and R to L channel (Typical performance 45 - 55 dB separation).

HIGH-BLEND ADJUSTMENT

10. Set generator to 100µV and adjust VR801 (on center-wall mounted PCB) so that no blend is obtained. Turn generator down while observing both outputs. High blend should turn on around 50/60µV to obtain a separation reading of approx. 14dB at 1 KHz.(or 400 Hz).Make sure that high-blend turns off safely as generator output is increased to 100µV and above.

19/38KHz FILTERS ADJUSTMENT

11. With 19KHz modulation only and 1mV output from generator, adjust L4 (left channel) and L5 (right channel) for minimum THD on analyzer; or observed on an oscilloscope, adjust for minimum noise on the curve (a straight line); or observed on VTVM, adjust for minimum output.



RF AND OSCILLATOR ADJUSTMENT

1. (Same as 7120)

IF ADJUSTMENT

2. (Same as 7120)
3. (Same as 7120)
4. (Same as 7120)

DETECTOR ADJUSTMENT

5. Set output from generator to approx. 1mV, and tune generator to the exact frequency of the receiver display. This requires either a digital readout generator or a frequency counter to set generator frequency. If neither is available (or inconvenient), tune receiver to a known station preferably around midband (98MHz). Adjust L2 so that decimal point on display stops flashing. By means of receiver tuning, go one step up (+50KHz) and one step down (-50KHz), check and make sure (by minor adjustment of L2) that decimal-point starts flashing on either side tune.

6. With 1 KHz 100% modulation and 1mV output from generator, adjust L3 for minimum distortion (0.08-0.12% typical). Do not adjust L2 again at this point, but go back and check decimal point as per step 5. If it reads incorrectly, repeat step 5 and 6.

7. Set output from generator to 2μV and adjust VR1 so that decimal point does not flash above 2μV (assuming of course that generator is tuned to correct frequency) At 3uV check decimal point flashing by side tuning ±50KHz again.

MPX ADJUSTMENT

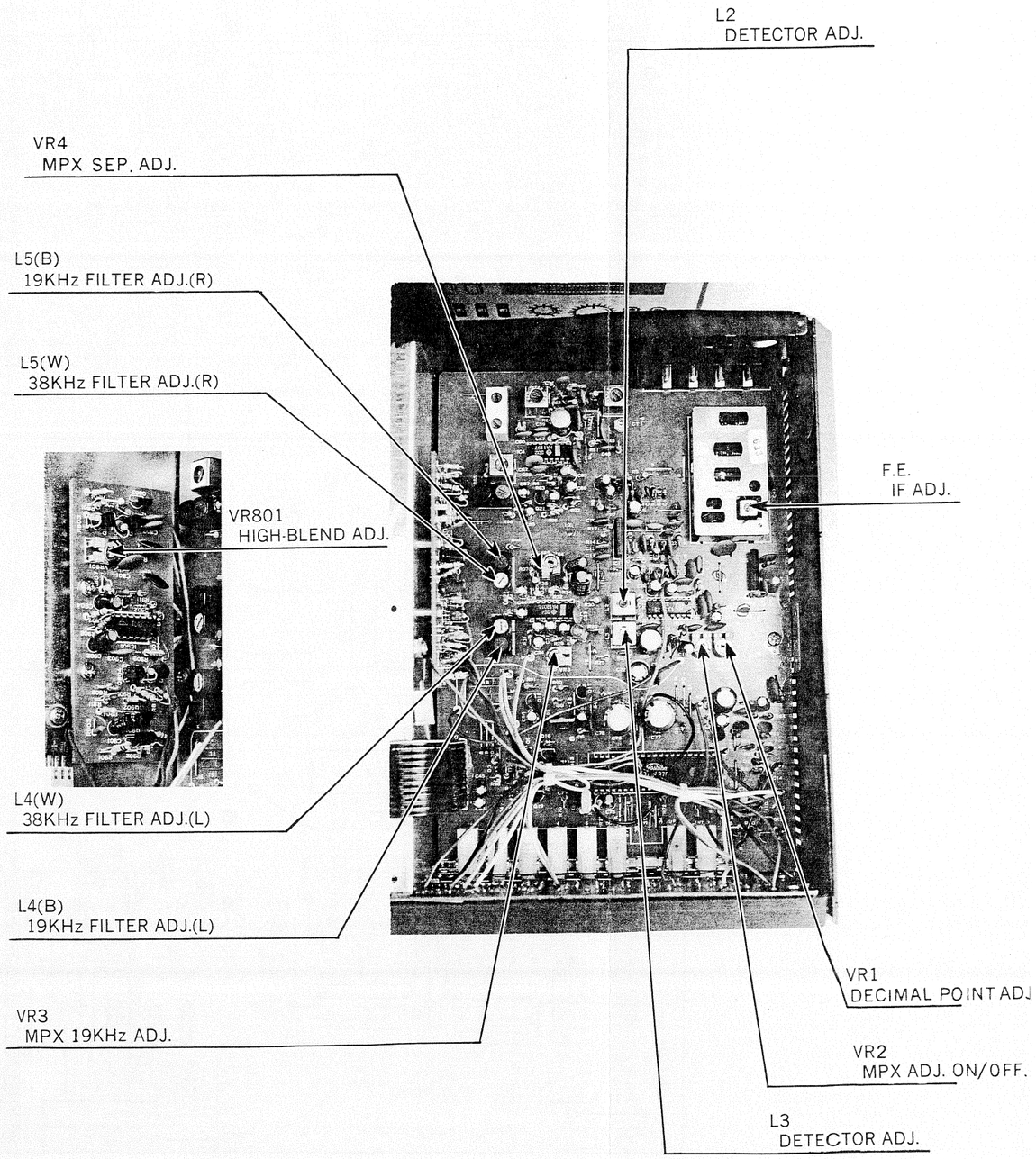
8. (Same as step 7, 7120)
9. (Same as step 8, 7120)
10. (Same as step 9, 7120)

HIGH-BLEND ADJUSTMENT

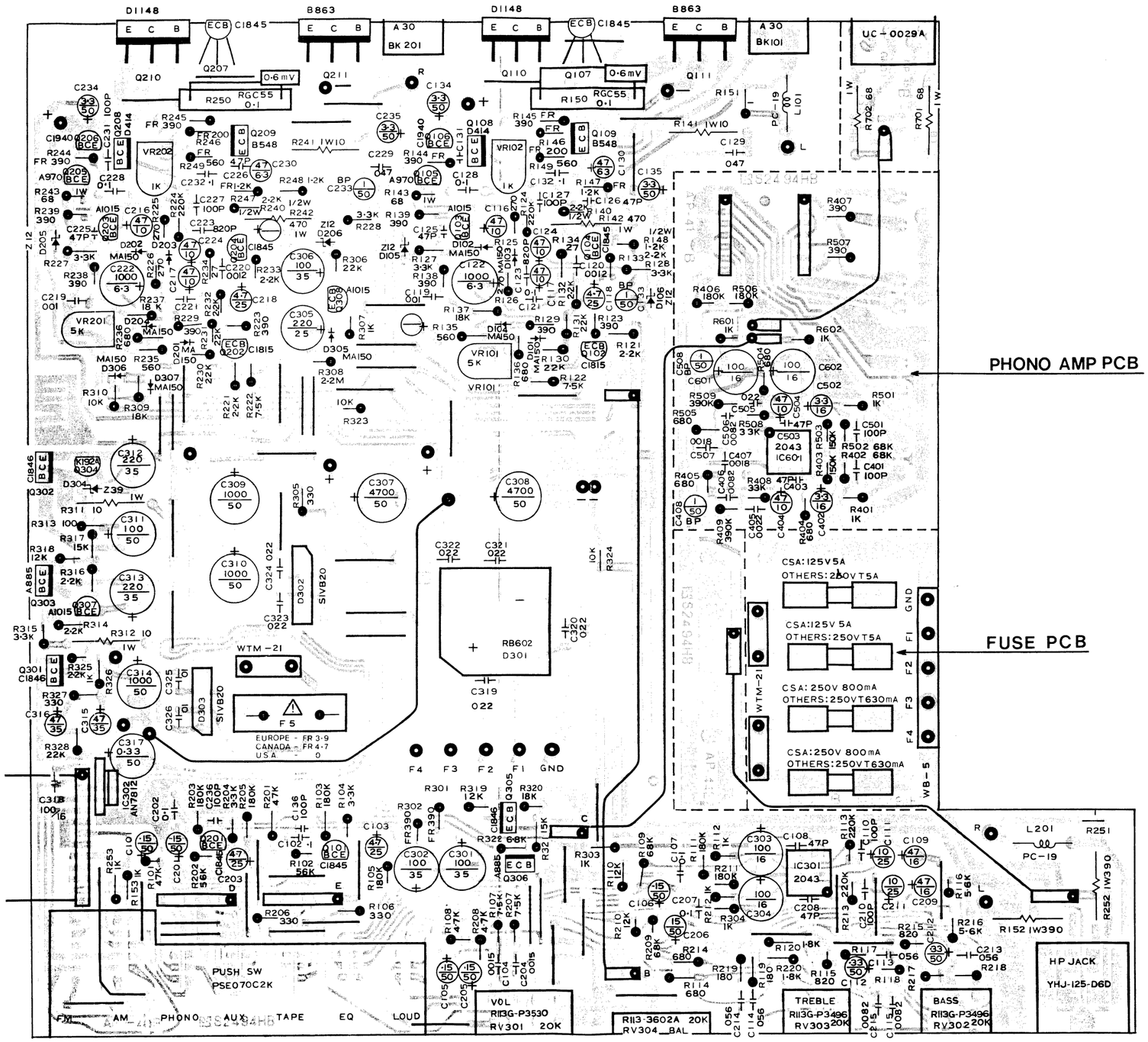
11. (Same as step 10, 7120)

19/38 KHz FILTERS

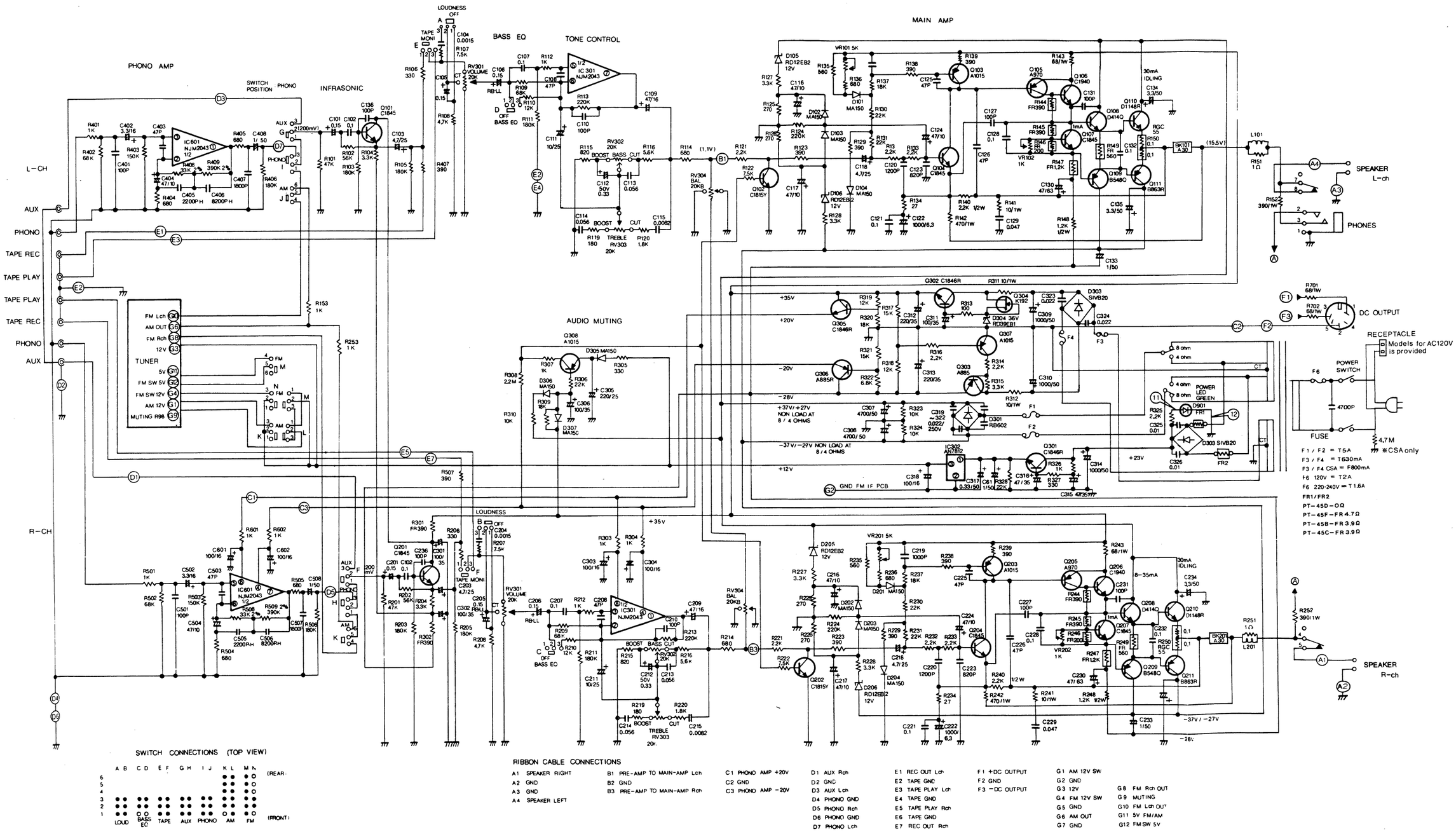
12. (Same as step 11, 7120)



AMPLIFIER PCB
NAD7120



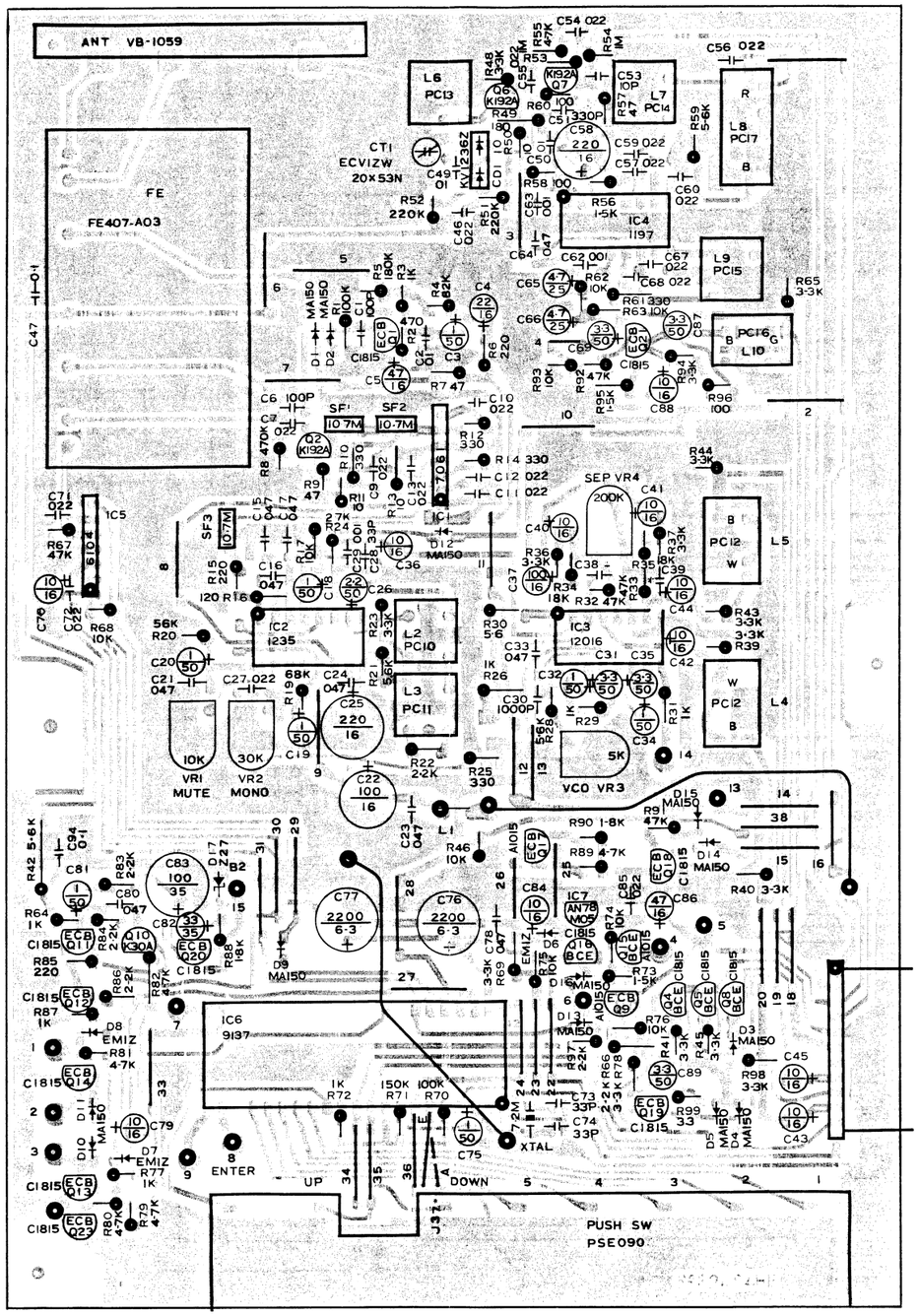
SCHEMATIC DIAGRAM
NAD7120
AMPLIFIER



RIBBON CABLE CONNECTIONS

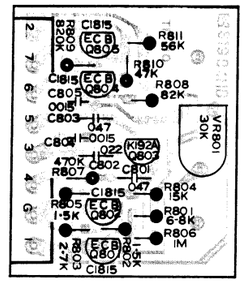
A1 SPEAKER RIGHT	B1 PRE-AMP TO MAIN-AMP Lch	C1 PHONO AMP +20V	D1 AUX Rch	E1 REC OUT Lch	F1 +DC OUTPUT	G1 AM 12V SW	
A2 GND	B2 GND	C2 GND	D2 GND	E2 TAPE GND	F2 GND	G2 GND	
A3 GND	B3 PRE-AMP TO MAIN-AMP Rch	C3 PHONO AMP -20V	D3 AUX Lch	E3 TAPE PLAY Lch	F3 -DC OUTPUT	G3 12V	G8 FM Rch OUT
A4 SPEAKER LEFT			D4 PHONO GND	E4 TAPE GND		G4 FM 12V SW	G9 MUTING
			D5 PHONO Rch	E5 TAPE PLAY Rch		G5 GND	G10 FM Lch OUT
			D6 PHONO GND	E6 TAPE GND		G6 AM OUT	G11 5V FM/AM
			D7 PHONO Lch	E7 REC OUT Rch		G7 GND	G12 FM SW 5V

TUNER PCB
NAD7120

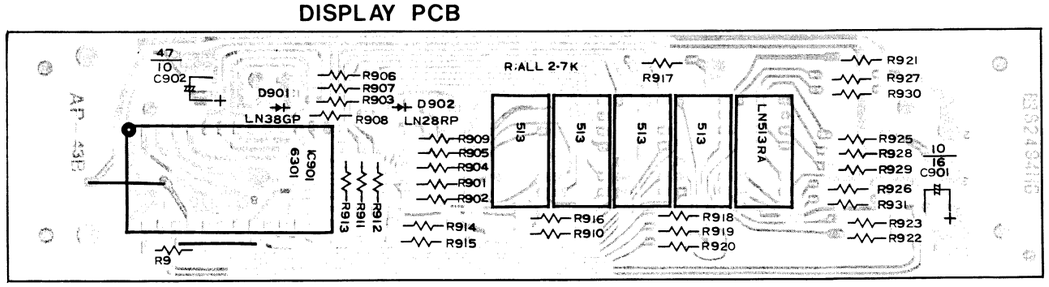


* EUROPE J37 E = R0 . C38, C39 = 0·001
* AMERICA J37 A = R36K. C38, C39 = 0·0015

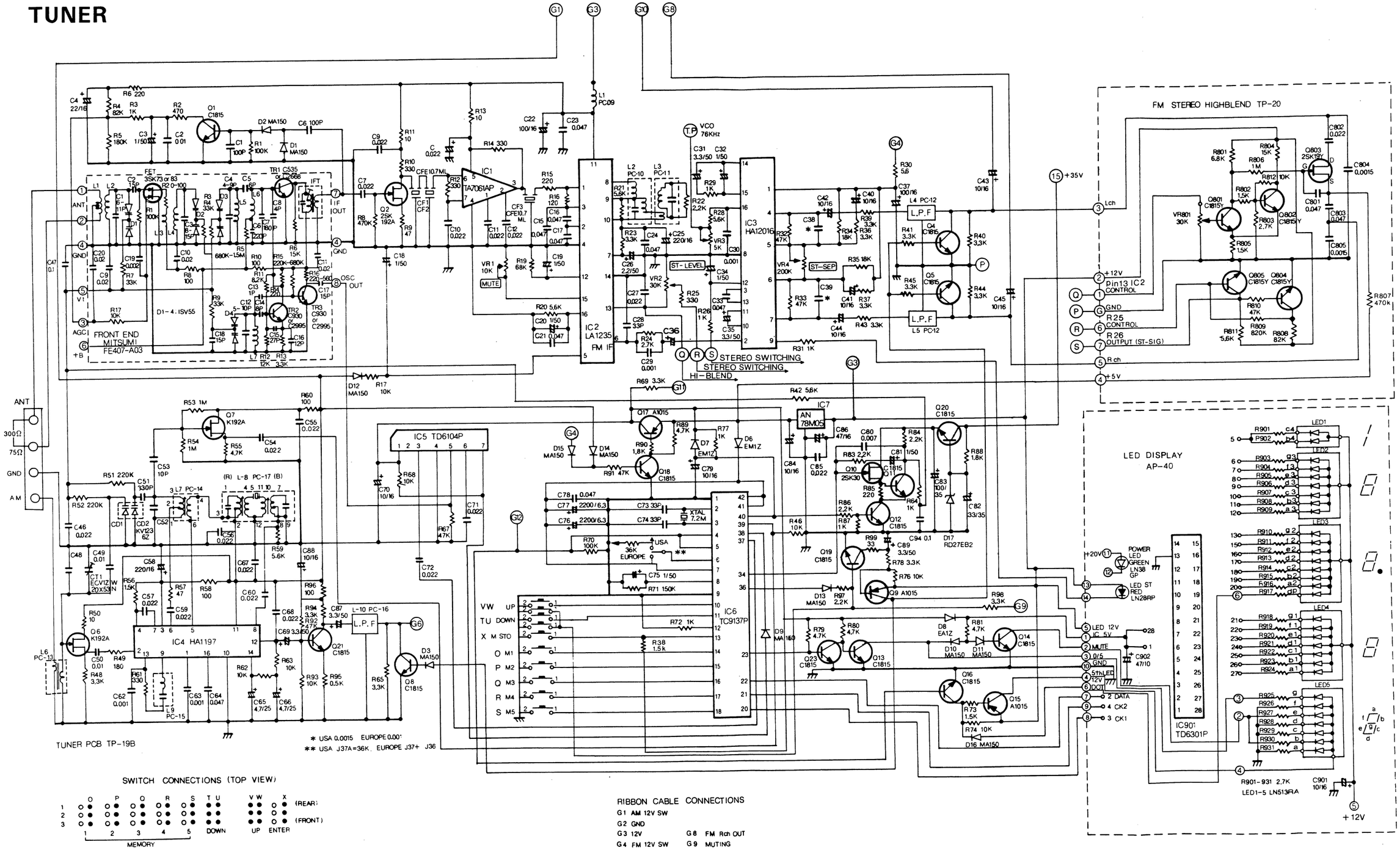
HI-BLEND PCB



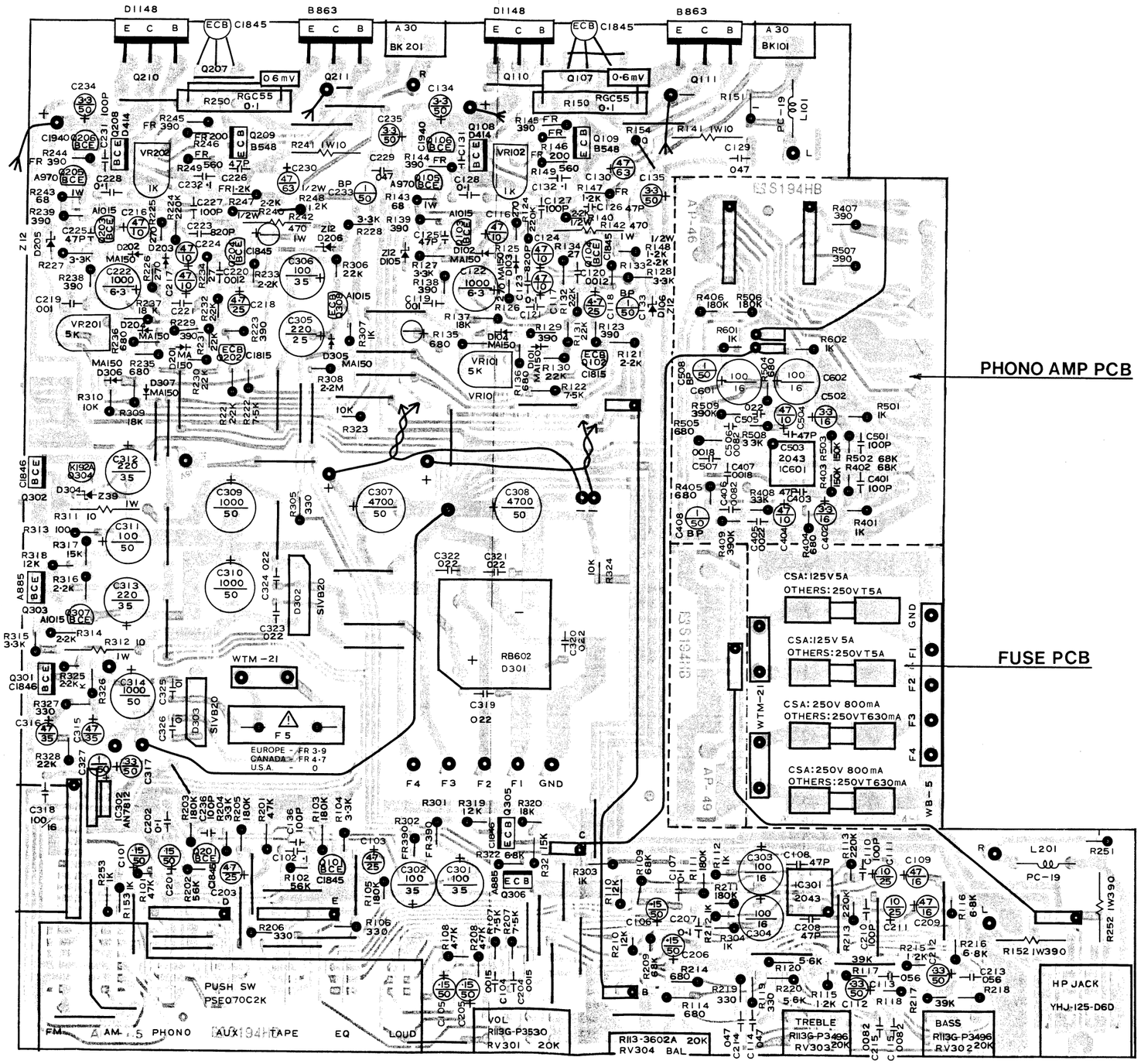
DISPLAY PCB



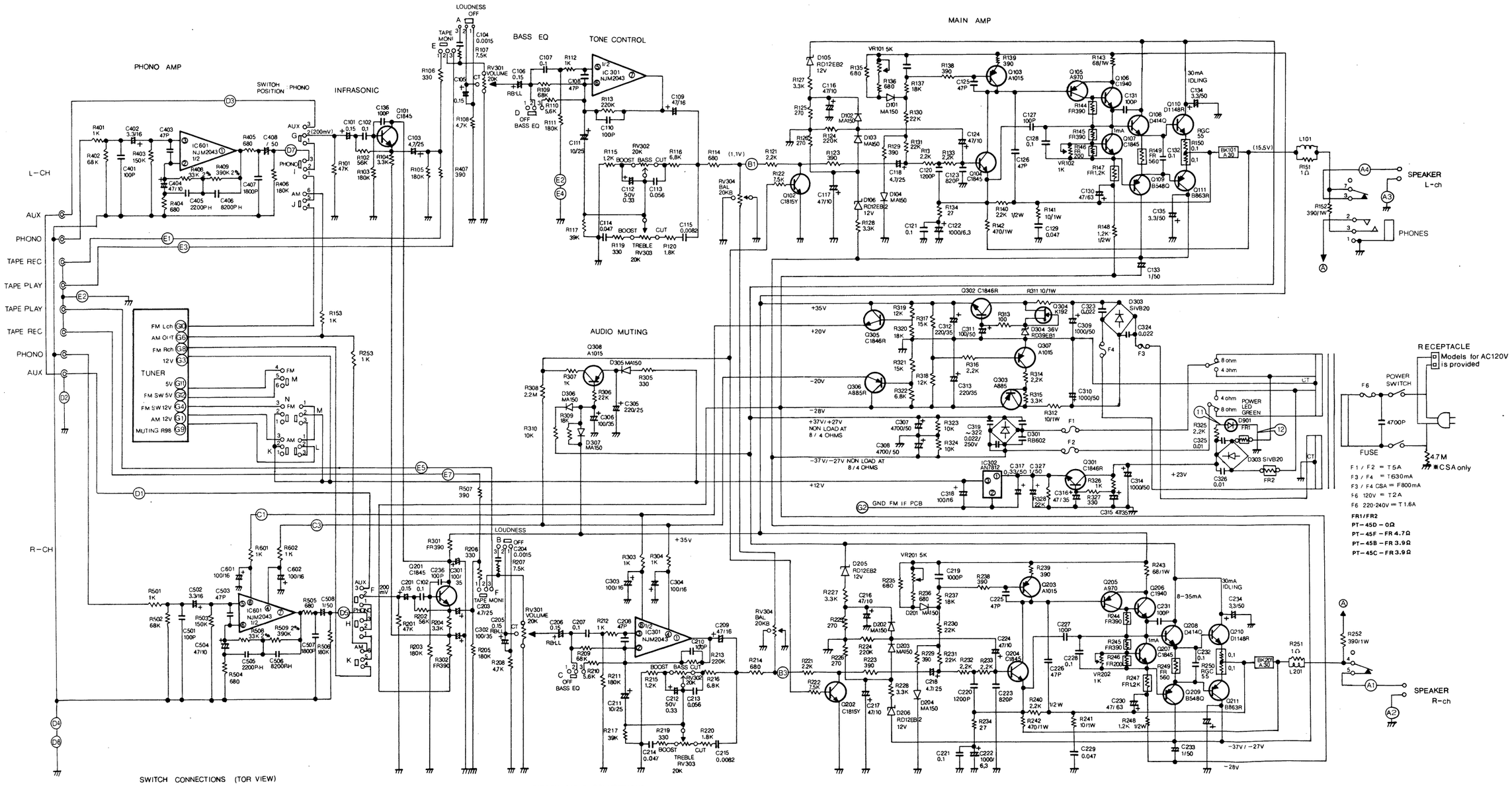
SCHEMATIC DIAGRAM
NAD7120
TUNER



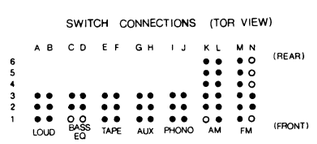
AMPLIFIER PCB
NAD7125



SCHEMATIC DIAGRAM
NAD7125
AMPLIFIER



SWITCH CONNECTIONS (TOR VIEW)



RIBBON CABLE CONNECTIONS

A1 SPEAKER RIGHT
A2 GND
A3 GND
A4 SPEAKER LEFT

B1 PRE-AMP TO MAIN-AMP Lch
B2 GND
B3 PRE-AMP TO MAIN-AMP Rch

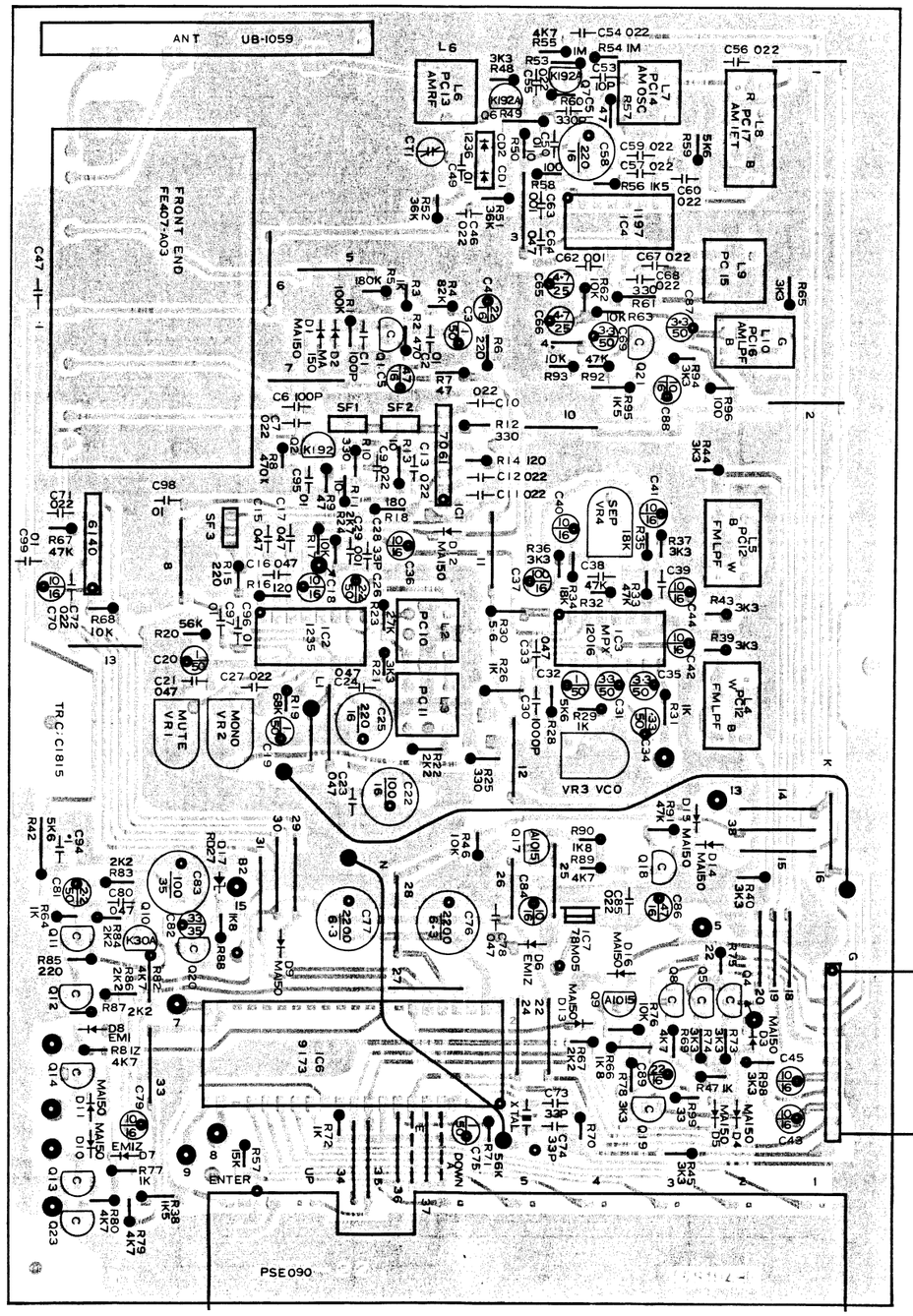
C1 PHONO AMP +20V
C2 GND
C3 PHONO AMP -20V

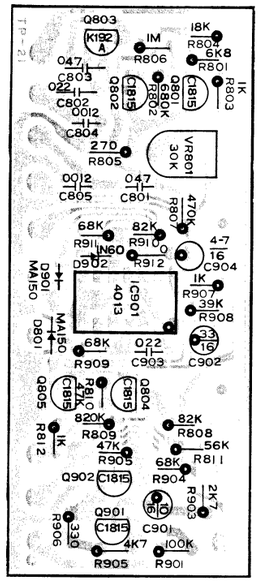
D1 AUX Rch
D2 GND
D3 AUX Lch
D4 PHONO GND
D5 PHONO Rch
D6 PHONO GND
D7 PHONO Lch

E1 REC OUT Lch
E2 TAPE GND
E3 TAPE PLAY Lch
E4 TAPE GND
E5 TAPE PLAY Rch
E6 TAPE GND
E7 REC OUT Rch

G1 AM 12V SW
G2 GND
G3 12V
G4 FM 12V SW
G5 GND
G6 AM OUT
G7 GND
G8 FM Rch OUT
G9 MUTING
G10 FM Lch OUT
G11 5V FM/AM
G12 FM SW 5V

TUNER PCB
NAD7125

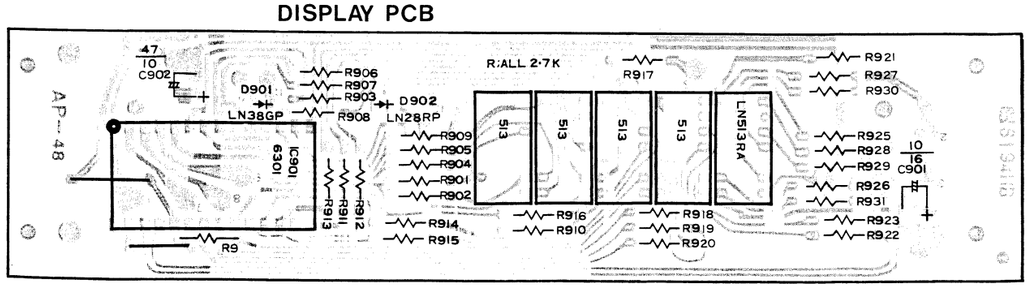




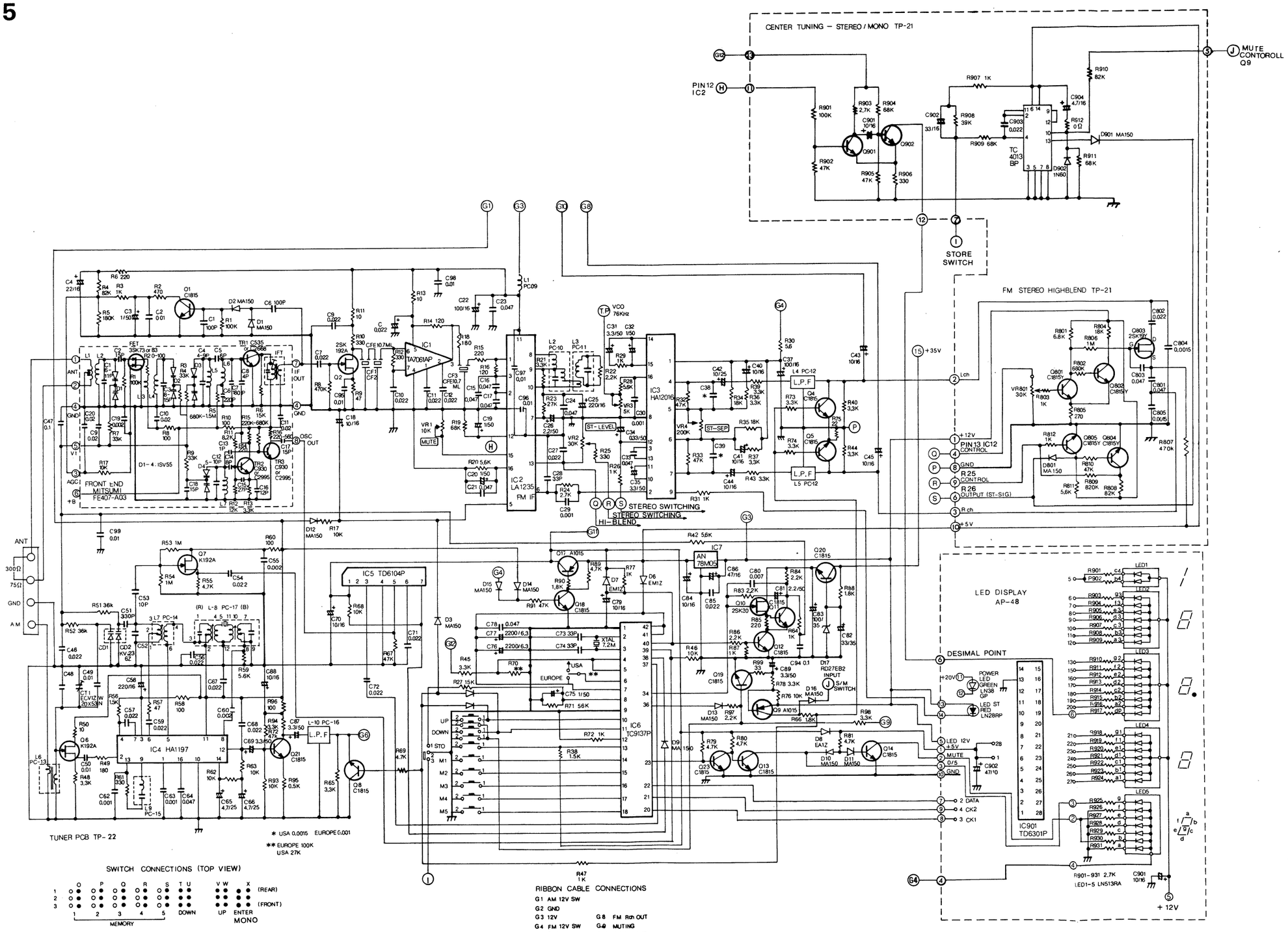
FLICKER PCB

HI-BLEND
CENTER TUNING
STEREO/MONO SWITCHING

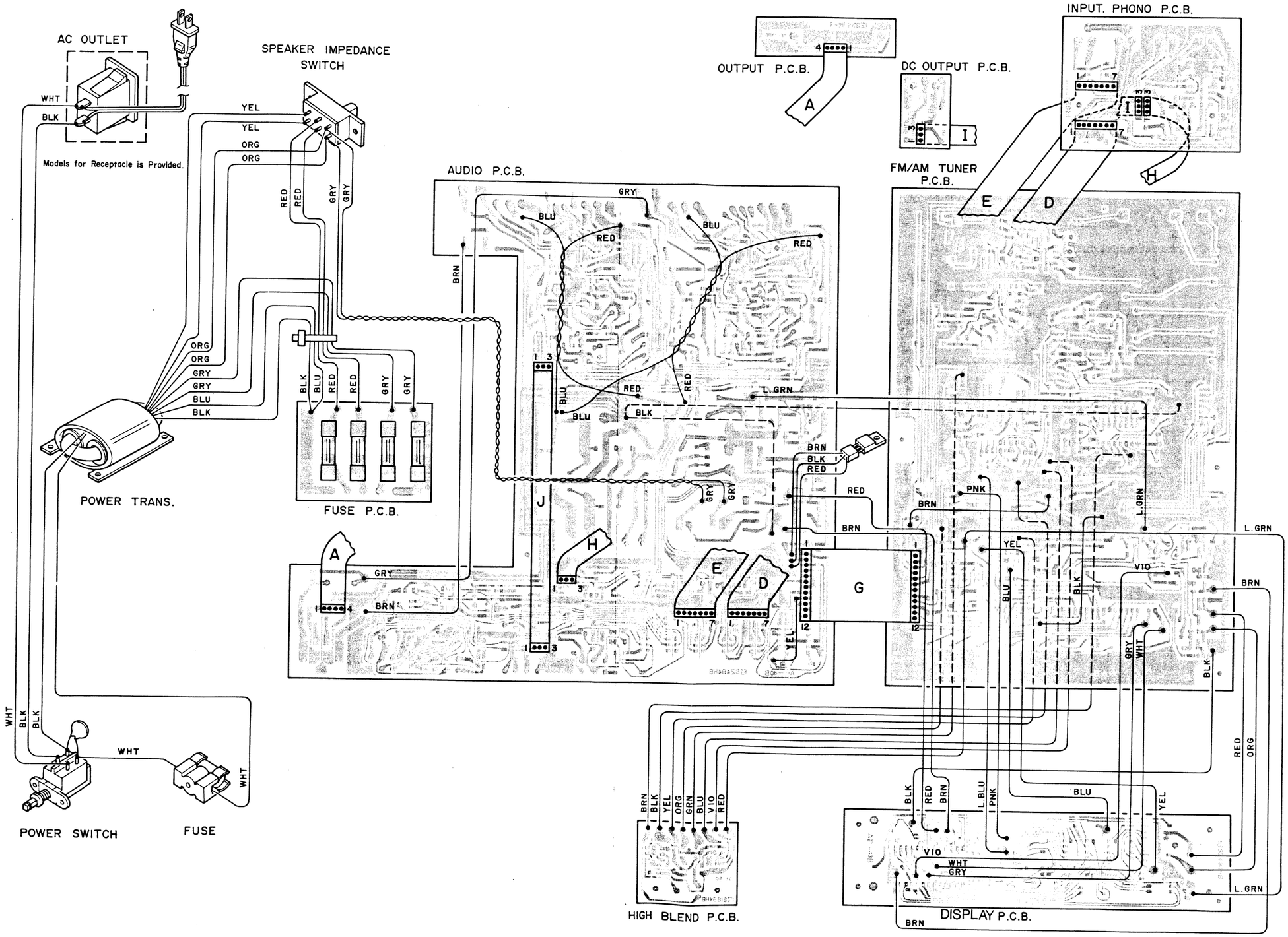
DISPLAY PCB



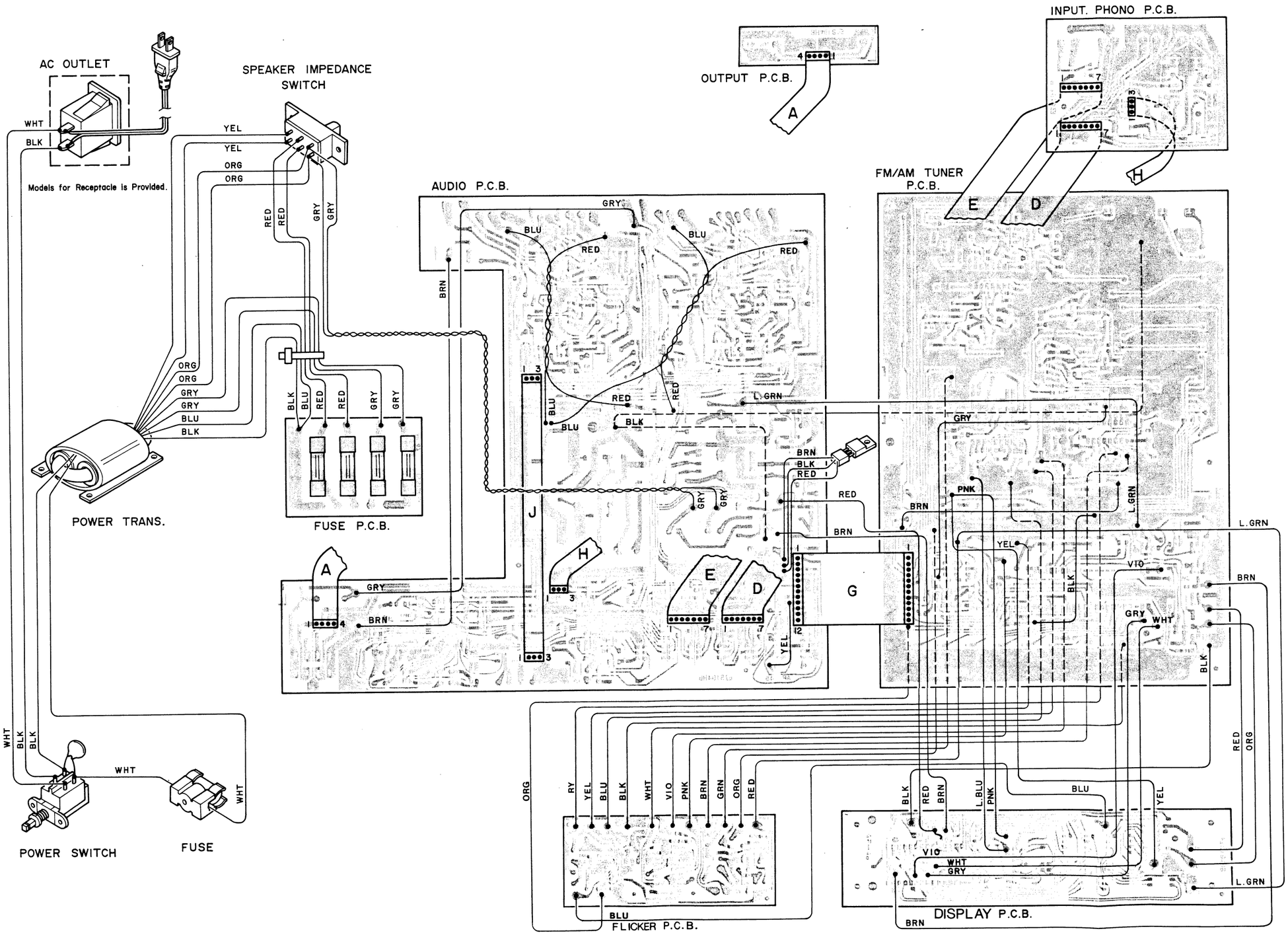
SCHEMATIC DIAGRAM
NAD7125
TUNER



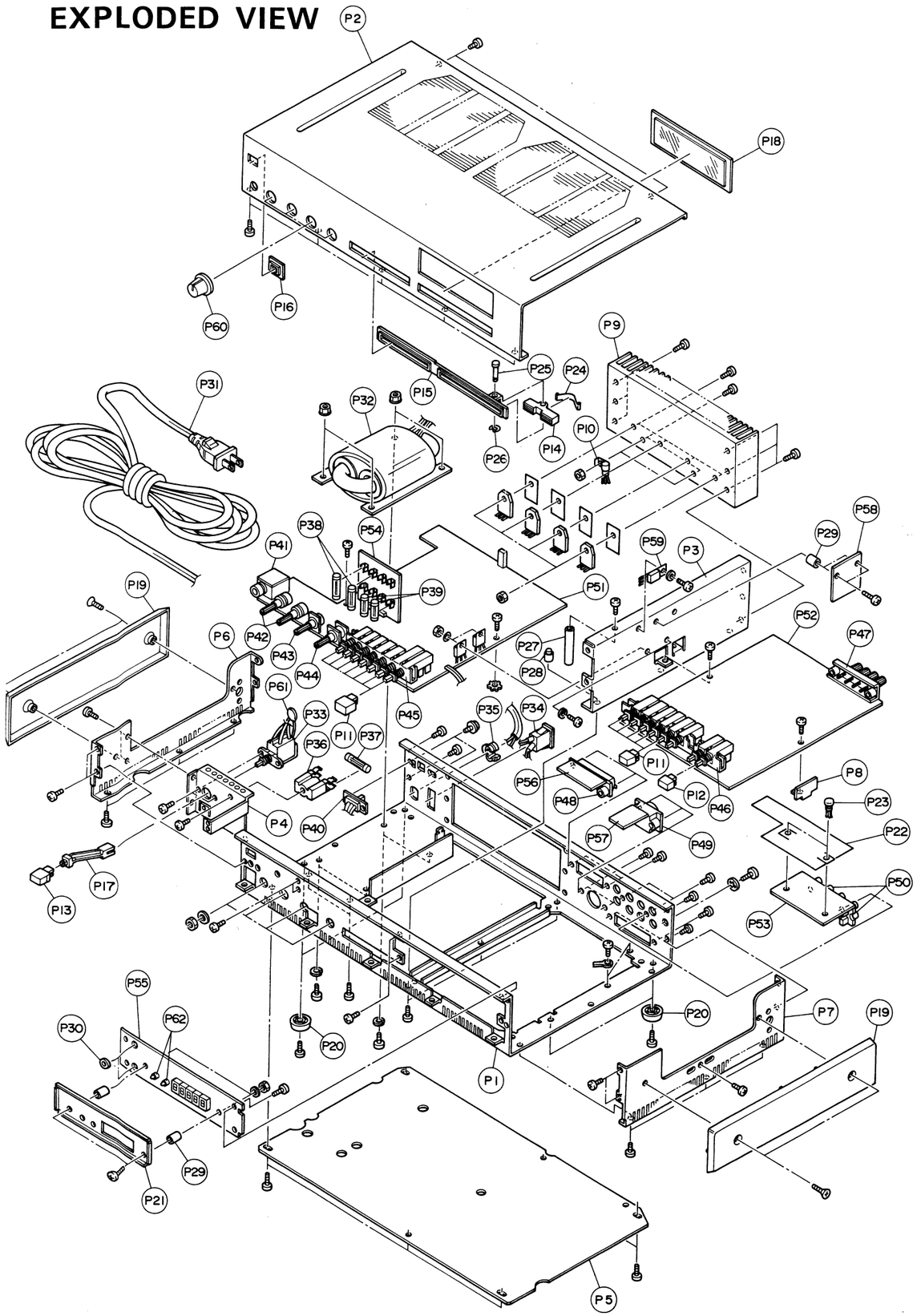
WIRING DIAGRAM
NAD7120



WIRING DIAGRAM
NAD7125



EXPLODED VIEW



PARTS LIST

7120 / 7125

Ref. No.	Code No.	Description	Parts No.
P 1	142474	Bottom Chassis (AQ)220V	SN-210020E-1
	142475	" (AR)120V UL	SN-210020E-2
	141576	" (AT)120V CSA	SN-210020E-3
	141575	" (AS)240V	SN-210020E-
P 2	312864	Wrap Around Top Panel	SN-220254
P 3	141566	Chassis Frame	SN-230304
P 4	141567	AC Switch Bracket	SN-230303-A
P 5	141570	Bottom Plate	SN-220255
P 6	141568	Side Bracket (L)	SN-230310
P 7	141569	Side Bracket (R)	SN-230311
P 8	141573	p.c.b. Bracket	SN-241009
P 9	212414	Heat Sink (SP)	SN-230307
P10	373477	Heat Sink for Transistor	No.37
P11	302788	Square Push Button	KB-10D
P12	302928	Square Push Button	KR-10D
P13	302929	Square Push Button	KG-10D
P14	302927	Square Push Button	KB-08GA
P15	182182	Square Button Frame (SJ)	SN-230309
P16	182176	Square Button Frame (SI)	SN-240988
P17	182181	Power Switch Arm (SB)	SN-230302
P18	182175	LED Window (SA)	SN-240987
P19	182177	Side Plate	SN-230301
P20	192237	Foot	MD-304
P21	182180	LED Indicator Plate	SN-241004
P22	192398	P.C.B. Cover	SN-241010
P23	192293	Plastic Rivet	No.1027
P24	222456	Leaf Spring (SW)	SN-241002
P25	141572	Shaft A, Tuning Button	SN-241005
P26	...	E-Ring for Shaft A	...
P27	151689	Stud No.14	SN-230241
P28	151690	Stud No.15	SN-241018
P29	151678	Bs. Stud No.4	SN-230242I
P30	151688	Bs. Stud No.13	
P31	202310	AC Power Cord 220V	SP-204
	202304	" 120V USA	SPT-1
	202321	" 120V CSA	SPT-2
	202307	" 240V BS/SAA	

Ref.No.	Code No.	Description	Parts No.
P32	161878	Power Transformer 120V(USA)	PT-45D
	161879	" 220V	PT-45B
	161880	" 120V(CSA)	PT-45F
	161881	" 240V	PT-45C
P33	111118	Power Switch 220V,240V	ESB-90117s
	111124	" 120V	ESB-90102t
P34	121230	AC Convenience Outlet (US/CSA)	S2-737T-100
P35	373475	AC Cord Stopper 220V/240V	W-5116
	373495	" 120V(USA)	SR-3P-4
	372898	" 120V(CSA)	SR-4N-4
P36	262574	Fuse Holder 220V/120V(USA)	UF-0015
	261797	" 120V(CSA)	H-0445
P37		Time Lag Fuse	
P38		Time Lag Fuse	
P39		Time Lag Fuse	
P40	111142	Speaker Impedance Switch	
P41	121235	Headphone Jack	YHJ-125-060
P42	101042	Rotary Variable Res.(Bas/Treb)	R113G-P3496-2
P43	101036	Rotary Variable Res. (Balance)	R113-3602A
P44	101037	Rotary Variable Res. (Volume)	R113G-P3530
P45	111147	Push Switch	PSE070C2K
P46	111141	Push Switch	PSE090
P47	121231	Antenna Terminals	UB-1059#02
P48	121233	Speaker Terminals	UG-0020#1
P49		DIN Socket	
P50	121178	4P-PIN Jack (PHONO INPUT, AUX INPUT, TAPE Rec./Play)	UA-1075#01
P51		PCB, Audio Sect.	
P52		PCB, Tuner Sect.	
P53		PCB, Phono Sect.	
P54		PCB, Fuse	
P55		PCB, LED	
P56		PCB, Speaker Terminals	
P57		PCB, DIN Socket	
P58		PCB, Hi-Blend (7120) PCB, Flicker (7125)	
P59	030122	IC, Regulator	AN-7812
P60	302926	Round mould knob	PB-18B
P61		Capacitor, Noise Killer	
P62		LED Spacer	

NOTE

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NOTE

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